WHAT IS CLAIMED

1. A method of processing digital image data comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform, and

detecting regions of contrast within the image data.

2. The method of claim 1 wherein the detected regions of contrast are used to determine if a line is present within the image.

3. The method of claim 1 wherein the detected regions of contrast are used to detect if a semi-plane is present within the image.

4. The method of claim 1 wherein the detected regions of contrast are used to determine if a triangular shape is present within the image.

5. The method of claim 1 wherein the detected regions of contrast are used to determine if a line junction is present within the image.

6. The method of claim 1 wherein the detected regions of contrast are used to determine if a disk shape is present within the image.

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7. The method of claim 1 wherein the detected regions of contrast are used to determine if a ring shape is present within the image.

8. The method of claim 1 wherein a transform coefficient is used to identify areas within the hexon pattern structure to detect where a line might be present.

9. The method of claim 8 wherein a transform coefficient is used to identify areas within the hexon pattern structure to detect where a line might be present.

10. The method of claim 1 wherein a transform coefficient is used to identify areas within the hexon pattern structure to detect where a semi-plane might be present.

11. The method of claim 9 wherein a transform coefficient is used to identify areas within the hexon pattern structure to detect where a semi-plane might be present.

12. The method of claim 8 wherein the hexon pattern structure comprises the central group of pixels and an at least one-axis symmetrical arrangement of surrounding pixel groups.

13. The method of claim 8 wherein the symmetrical arrangement comprises six surrounding groups of pixels, each group of pixels having the same number of pixels as other groups, and the number of pixels in the groups being between 1 and 100.

14. The method of claim 13 wherein the comparing of a property is done by moving the central group of pixels uniform distances in relationship to the position of pixels in the image data.

16. The method of claim 14 wherein the comparing of a property is done by moving the central group of pixels uniform distances in relationship to the position of pixels in the image data and storing the comparisons.

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17. The method of claim 15 wherein the comparing of a property is done with a transform coefficient.

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18. The method of claim 15 wherein the comparing of a property is done with a transform coefficient.

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19. The process of claim 16 wherein the uniform distance is approximately equal to a dimension of the central group of pixels.

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20. The method of claim 8 wherein only lines within a range of predetermined width are detected.

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21. The method of claim 8 wherein only lines of a predetermined darkness or brightness are detected.

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22. The method of claim 8 wherein only lines of a predetermined orientation are detected.

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23. The method of claim 8 wherein only lines of a predetermined edge sharpness are detected.

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24. The process of claim 1 wherein the digital image data includes lines and edge features, and the detection of only lines of a predetermined width excludes the detection of at least some edge features.

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25. The process of claim 1 wherein the digital image data includes lines and edge features, and the detection of only lines of a predetermined darkness or brightness excludes the detection of at least some edge features.

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26. The process of claim 1 wherein the digital image data includes lines and edge features, and the detection of only lines of a predetermined orientation.

27. The process of claim 1 wherein the digital image data includes lines and edge features, and the detection of only lines of a predetermined edge sharpness.

28. A method of processing digital image data comprising detecting shapes of predetermined width in an image by means of application of a local radial angular transform to digital image data.

29. The method of claim 28 wherein the shapes are lines.

30. A method of processing digital image data comprising detecting shapes of predetermined brightness or darkness with respect to their surroundings in an image by means of application of a local radial angular transform.

31. The method of claim 30 wherein the shapes are lines.

32. A method of processing digital image data comprising providing a hierarchical description of shapes in an image according to scale by means of application of a local radial angular transform to digital image data.

33. The method of claim 32 wherein the shapes are lines.

34. A method of processing digital image data comprising utilizing responses selected from the group consisting of $|c_3|$ line responses, $|c_2|$ semi-plane responses, $|c_4|$ triangle or line-junction/line-intersection, and $|c_1/6 - B_0|$ disk/ring responses for detecting objects.

35. A computer having hardware and software that enables execution of the process of claim 1.